CHAPTER 1
INTRODUCTION

1-1. Purpose

The purpose of this publication is to provide guidance for facilities managers and engineers in selection, design, installation, commissioning, and operation and maintenance of supervisory control and data acquisition (SCADA) systems for command, control, communications, computer, intelligence, surveillance and reconnaissance (C4ISR) facilities. SCADA systems provide control and monitoring of the mechanical and electrical utility systems serving the mission critical loads. Although this technical manual (TM) is written primarily for C4ISR facilities and reflects the high reliability required for those facilities, it may also be used a reference for similar systems in other facility types.

1-2. Scope

The fundamental concepts of control systems, including industry standards and definitions are presented as an introduction to the subject. Topics covered include system architecture, network communication methods, reliability considerations, operator interfaces, and commissioning. Control system architecture review and recommended SCADA configurations for typical small, medium, and large facilities are presented. Special reliability and threat-resistance considerations governing SCADA systems are discussed. Operational issues including commissioning, maintenance practices and requirements for SCADA system documentation are also presented.

1-3. References

A complete list of references with citations is included in appendix A. Selection, design, installation, and commissioning of SCADA systems should always be based on the most current relevant edition of the standards listed in the references. Where the recommendations of this manual and the referenced standards differ, the more stringent requirement should be followed.

1-4. Currency

Because SCADA systems make extensive use of electronic technology, the technology cycle can be very short, and recommendations regarding specific types of hardware, software, communications protocols, etc. in this TM may no longer represent the state of the art several years following publication. Selection of SCADA systems should consider the advantages obtained from application of advanced technologies, but must assure that the newer technologies considered comply with the principles identified in this TM for reliability and threat-resistance and have a demonstrated history in field service adequate to assure the attainment of design reliability criteria.